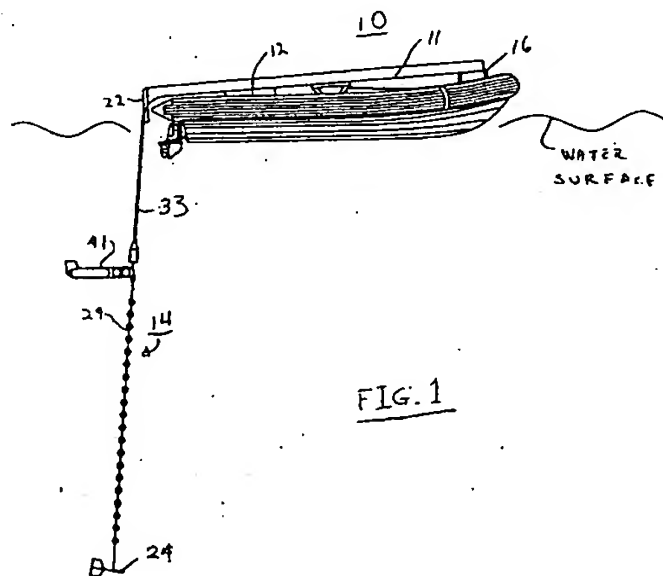


## REMARKS

Claims 1-54 are pending in the application. Claims 1-54 stand rejected. In the Description of the Figures, the Examiner noted that the word "illustrates" is missing from the description of Figures 1B and 1C. The Examiner's objections and rejections are addressed below in substantially the same order as in the office action.

### The Cited Prior Art

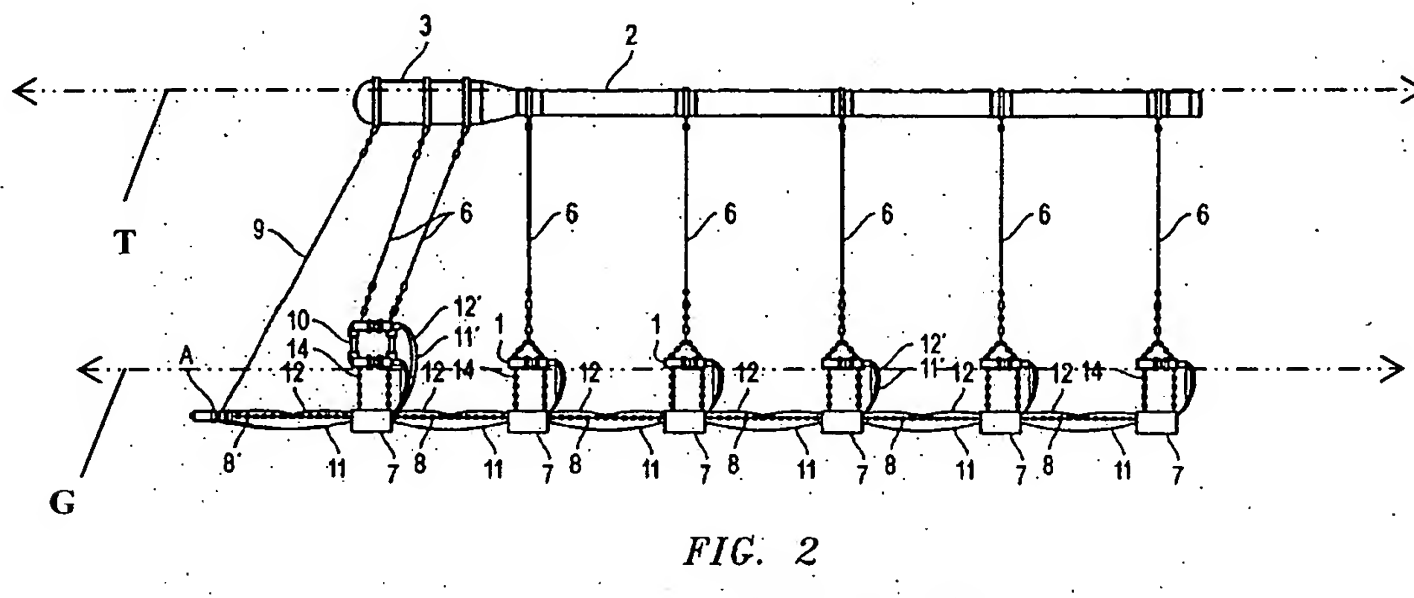
The Examiner cites Bouyoucos as the basis for many of the claim rejections. The Examiner contends that Bouyoucos discloses "an array 14 with a first cluster containing at least two acoustic sources 30. He discloses attaching all of the sources to a common array, and therefore the acoustic sources are disposed at a substantially common depth." For convenience, Applicant has reproduced **Fig. 1** of Bouyoucos below.



Bouyoucos discloses an air gun array for use in locating objects such as submarines in water. As shown in **Fig. 1**, the array of air gun acoustic sources 14 is positioned vertically. Thus, the air guns are not at substantially a common depth, *i.e.*, the sources next to the guide fish 24 are not at the same depth as the sources next to the control unit 41. Similar vertical arrangements for the acoustic sources are shown in **Figs. 2A, 2B, 6A, 6B** and **19**. Further, the specification in paragraph 0004 describes the devices as "a multiple element, vertical acoustic array[.]" (emphasis added). Thus, Applicant respectfully submits

that Bouycoucos does not show acoustic sources disposed at a substantially common depth.

The Examiner also cites Sanchez as basis for several claim rejections. The Examiner contends that Sanchez "discloses an array of more than two acoustic sources 1, each source having a longitudinal axis. He discloses the sources as being disposed at a common depth with the longitudinal axis being orthogonal to the direction of towing (Fig. 2)." For convenience, Applicant has reproduced Fig. 2 of Sanchez below.



Sanchez discloses an air gun array for use in marine surveys. Sanchez states that "[i]n the embodiment of FIG. 2 the float 2 is an elongate float of the type described in U.S. Pat. No. 4,686,660 and the end 3 of the float that is intended to be the leading end when the source is towed is shaped so as to reduce water resistance. " (Col. 2, lines 55-60). Moreover, numeral A is described as the towing point. (Col. 3, lines 9-11). For convenience, the direction of towing has been labeled with axis T. Also, the air guns 1 are shown arranged end-to-end, with the electrical cables 12 are shown attached at the trailing end of each gun. Thus, the longitudinal axis of the guns lies along a line running through all the guns, as shown by line G. Lines G and T are parallel, not orthogonal. This nomenclature is consistent with that used in the specification of the pending application at paragraph 0052 and in Fig. 1A. Thus, Applicant respectfully submits that Sanchez does not show acoustic sources disposed with the longitudinal axis being orthogonal to the direction of towing.

### **SPECIFICATION**

Applicant has corrected the stated informality regarding the word "illustrates" that was missing from the description of Figs. 1B and 1C.

### **REJECTIONS UNDER 35 USC § 102**

The Examiner rejected claims 1, 3, 4, 5, 9, 10 and 24 under 35 U.S.C. 102(e) as being anticipated by Bouyoucos (Jan. 22, 2004). As noted previously, the Bouyoucos does not disclose an air gun array having air guns at a substantially common depth. Rather, the air guns of Bouyoucos are stacked vertically with air guns at substantially different depths:

With respect to claim 1, therefore, Bouyoucos does not teach or suggest sources at a substantially common depth. Accordingly, Applicant respectfully submits that Claim 1 is in condition for allowance.

With respect to claims 3, 4, 5, 9 and 10, these claims depend from claim 1, a claim believed to be in condition for allowance. Accordingly, Applicant respectfully submits that claims 3,4,5,6 and 10 are also in condition for allowance.

With respect to claim 24, Bouyoucos does not teach or suggest sources along a plane generally parallel with a water surface. Rather, the air guns of Bouyoucos are vertically aligned, *i.e.*, perpendicular to the water surface. Accordingly, Applicant respectfully submits that Claim 24 is in condition for allowance.

### **REJECTIONS UNDER 35 USC § 103**

The Examiner has rejected Claims 2, 6, 13, 14, 15, 16, 18, 19, 24, 25, 28, 29, 34, 35, 37, 39, 44, 45, 56, 47, 50, and 54 under 35 U.S.C. 103(a) as being unpatentable over Bouyoucos in view of Sanchez.

As previously discussed, Bouyoucos does not disclose an air gun array having air guns at a substantially common depth and Sanchez does not disclose air guns having longitudinal axes perpendicular to the direction of towing. Accordingly, Bouyoucos and Sanchez do not separately disclose the claimed invention. Furthermore, Applicant has found no suggestion for the combination of Bouyoucos and Sanchez in a manner suggested by the Examiner. Indeed, Bouyoucos and Sanchez are incompatible teachings relating to totally different applications. Bouyoucos is directed to detecting objects such as submarines in the water. In contrast, Sanchez is directed to marine surveys, *i.e.*, surveying earthen formations below the sea bed to locate oil and gas bearing reservoirs. Each of these activities require totally different acoustic source signatures to function. Accordingly, one

skilled in the art would not have reason to consider a combination of Bouyoucos and Sanchez in a manner suggested by the Examiner.

With respect to claims 2 and 6, these claims depend from claim 1, a claim believed to be in condition for allowance. For the reasons stated for the allowability of claim 1 and for the reasons stated above regarding the incompatibility of Bouyoucos and Sanchez, Applicant respectfully submits that claims 2 and 6 are also in condition for allowance.

With respect to claim 13, for the reasons stated above Bouyoucos and Sanchez cannot be combined to teach sources at a substantially common depth and having a longitudinal axis of substantially orthogonal to a pre-determined direction of towing. Accordingly, Applicant respectfully submits that Claim 13 is in condition for allowance.

With respect to claims 14, 15, 16, 18, 19, these claims depend from claim 13, a claim believed to be in condition for allowance. Accordingly, Applicant respectfully submits that claims 14, 15, 16, 18, 19 are also in condition for allowance.

With respect to claim 24, for the reasons stated above Bouyoucos and Sanchez cannot be combined to teach sources at a substantially common depth and having a longitudinal axis of substantially orthogonal to a pre-determined direction of towing. Accordingly, Applicant respectfully submits that Claim 24 is in condition for allowance.

With respect to claims 25, 28, and 29, these claims depend from claim 24, a claim believed to be in condition for allowance. Accordingly, Applicant respectfully submits that claims 25, 28, and 29 are also in condition for allowance.

With respect to claim 34, for the reasons stated above Bouyoucos and Sanchez cannot be combined to teach sources on a plane parallel with the water surface and having a longitudinal axis of substantially orthogonal to a pre-determined direction of towing. Accordingly, Applicant respectfully submits that Claim 34 is in condition for allowance.

With respect to claims 35, 37, and 39, these claims depend from claim 24, a claim believed to be in condition for allowance. Accordingly, Applicant respectfully submits that claims 35, 37, and 39 are also in condition for allowance.

With respect to claim 44, for the reasons stated above Bouyoucos and Sanchez cannot be combined to teach sources at a substantially common depth and having a longitudinal axis of substantially orthogonal to a pre-determined direction of towing. Accordingly, Applicant respectfully submits that Claim 44 is in condition for allowance.

With respect to claim 45, for the reasons stated above Bouyoucos and Sanchez cannot be combined to teach sources at a substantially common depth and having a longitudinal axis of substantially orthogonal to a pre-determined direction of towing. Accordingly, Applicant respectfully submits that Claim 45 is in condition for allowance.

With respect to claims 46 and 47, these claims depend from claim 45, a claim believed to be in condition for allowance. Accordingly, Applicant respectfully submits that claims 46 and 47 are also in condition for allowance.

With respect to claim 50, for the reasons stated above Bouyoucos and Sanchez cannot be combined to teach sources parallel to the water surface and having a longitudinal axis of substantially orthogonal to a pre-determined direction of towing. Accordingly, Applicant respectfully submits that Claim 50 is in condition for allowance.

With respect to claim 54, for the reasons stated above Bouyoucos and Sanchez cannot be combined to teach sources parallel to the water surface and having a longitudinal axis of substantially orthogonal to a pre-determined direction of towing. Accordingly, Applicant respectfully submits that Claim 54 is in condition for allowance.

The Examiner has rejected claims 7, 8, 17, 26, 27, 36 and 38 under 35 U.S.C. 103(a) as being unpatentable over Bouyoucos in view of Williams.

With respect to claim 7, this claim depends from claim 1, a claim believed to be in condition for allowance. Accordingly, claim 7 is allowable on at least those grounds.

With respect to claim 8, this claim depends from claim 1, a claim believed to be in condition for allowance. Accordingly, claim 8 is allowable on at least those grounds.

With respect to claim 17, this claim depends from claim 13, a claim believed to be in condition for allowance. Accordingly, claim 17 is allowable on at least those grounds.

With respect to claim 26, this claim depends from claim 24, a claim believed to be in condition for allowance. Accordingly, claim 26 is allowable on at least those grounds.

With respect to claim 27, this claim depends from claim 24, a claim believed to be in condition for allowance. Accordingly, claim 27 is allowable on at least those grounds.

With respect to claim 36, this claim depends from claim 34, a claim believed to be in condition for allowance. Accordingly, claim 36 is allowable on at least those grounds.

With respect to claim 38, this claim depends from claim 34, a claim believed to be in condition for allowance. Accordingly, claim 38 is allowable on at least those grounds.

The Examiner has rejected Claims 11, 12, 22, 23, 30, 31, 40, 41, 48, 49, 51, 52, under 35 U.S.C. 103(a) as being unpatentable over Bouyoucos in view of Nooteboom.

With respect to claim 11, this claim depends from claim 1, a claim believed to be in condition for allowance. Accordingly, claim 11 is allowable on at least those grounds.

With respect to claim 12, this claim depends from claim 1, a claim believed to be in condition for allowance. Accordingly, claim 12 is allowable on at least those grounds.

With respect to claim 22, this claim depends from claim 13, a claim believed to be in condition for allowance. Accordingly, claim 22 is allowable on at least those grounds.

With respect to claim 23, this claim depends from claim 13, a claim believed to be in condition for allowance. Accordingly, claim 23 is allowable on at least those grounds.

With respect to claim 30, this claim depends from claim 24, a claim believed to be in condition for allowance. Accordingly, claim 30 is allowable on at least those grounds.

With respect to claim 31, this claim depends from claim 24, a claim believed to be in condition for allowance. Accordingly, claim 31 is allowable on at least those grounds.

With respect to claim 40, this claim depends from claim 34, a claim believed to be in condition for allowance. Accordingly, claim 40 is allowable on at least those grounds.

With respect to claim 41, this claim depends from claim 34, a claim believed to be in condition for allowance. Accordingly, claim 41 is allowable on at least those grounds.

With respect to claim 48, this claim depends from claim 45, a claim believed to be in condition for allowance. Accordingly, claim 48 is allowable on at least those grounds.

With respect to claim 49, this claim depends from claim 45, a claim believed to be in condition for allowance. Accordingly, claim 49 is allowable on at least those grounds.

With respect to claim 51, this claim depends from claim 50, a claim believed to be in condition for allowance. Accordingly, claim 51 is allowable on at least those grounds.

With respect to claim 52, this claim depends from claim 50, a claim believed to be in condition for allowance. Accordingly, claim 52 is allowable on at least those grounds.

The Examiner has rejected Claims 1, 3, 16, 24, 34, 44, 45, 46, 50 and 54 under 35 U.S.C. 103(a) as being unpatentable over Sanchez in view of Allensworth.

With respect to claim 1, as discussed previously, Applicant contends that Sanchez does not disclose air guns having a longitudinal axis orthogonal to the direction of towing. Accordingly, Applicant submits that the cited art of Sanchez and Allensworth, even when

combined, do not disclosed a recitation of claim 1. Accordingly, Applicant submits that claim 1 is in condition for allowance.

With respect to claim 3, this claim depends from claim 1, a claim believed to be in condition for allowance. Accordingly, claim 11 is allowable on at least those grounds.

With respect to claim 16, this claim depends from claim 13, a claim believed to be in condition for allowance. Accordingly, claim 12 is allowable on at least those grounds.

With respect to claim 24, as discussed previously, Applicant contends that Sanchez does not disclose air guns having a longitudinal axis orthogonal to the direction of towing. Accordingly, Applicant submits that the cited art of Sanchez and Allensworth, even when combined, do not disclosed a recitation of claim 24. Accordingly, Applicant submits that claim 24 is in condition for allowance.

With respect to claim 34, as discussed previously, Applicant contends that Sanchez does not disclose air guns having a longitudinal axis orthogonal to the direction of towing. Accordingly, Applicant submits that the cited art of Sanchez and Allensworth, even when combined, do not disclosed a recitation of claim 34. Accordingly, Applicant submits that claim 24 is in condition for allowance.

With respect to claim 44, as discussed previously, Applicant contends that Sanchez does not disclose air guns having a longitudinal axis orthogonal to the direction of towing. Accordingly, Applicant submits that the cited art of Sanchez and Allensworth, even when combined, do not disclosed a recitation of claim 44. Accordingly, Applicant submits that claim 24 is in condition for allowance.

With respect to claim 45, as discussed previously, Applicant contends that Sanchez does not disclose air guns having a longitudinal axis orthogonal to the direction of towing. Accordingly, Applicant submits that the cited art of Sanchez and Allensworth, even when combined, do not disclosed a recitation of claim 45. Accordingly, Applicant submits that claim 24 is in condition for allowance.

With respect to claim 46, this claim depends from claim 45, a claim believed to be in condition for allowance. Accordingly, claim 46 is allowable on at least those grounds.

With respect to claim 50, as discussed previously, Applicant contends that Sanchez does not disclose air guns having a longitudinal axis orthogonal to the direction of towing. Accordingly, Applicant submits that the cited art of Sanchez and Allensworth, even when combined, do not disclosed a recitation of claim 50. Accordingly, Applicant submits that claim 24 is in condition for allowance.

With respect to claim 54, as discussed previously, Applicant contends that Sanchez does not disclose air guns having a longitudinal axis orthogonal to the direction of towing. Accordingly, Applicant submits that the cited art of Sanchez and Allensworth, even when combined, do not disclosed a recitation of claim 54. Accordingly, Applicant submits that claim 24 is in condition for allowance.

The Examiner has rejected Claims 2, 5, 6, 7, 15, 17, 18, 19, 25, 26, 27, 28, 29, 36, 37, 38, 39, and 47 under 35 U.S.C. 103(a) as being unpatentable over Sanchez in view of Bouyoucos.

Applicant respectfully submits that Sanchez does not disclose the longitudinal axis of each source being perpendicular to the water surface. Further, Examiner states that that it would have been obvious to modify Sanchez with Bouyoucos "in order to obtain a different acoustic signal." As noted previously, the sources of Sanchez and Bouyoucos are used in two totally different applications. Examiner has not cited to any portion of the prior art of record to that would suggest modifying a source intended to locate submarines in water with teachings of a source intended to locate oil and gas in the earth, or vice versa. Given the contrary nature of the cited art, Applicant respectfully submits that some motivation or suggestion in the prior art of record is necessary to overcome the clearly incompatible teachings. Absent such suggestions, Applicant submits that the obviousness rejections based on Sanchez and Bouyoucos are inappropriate.

With respect to claims 2, 5, 6, 7, 15, 17, 18, 19, 25, 26, 27, 28, 29, 36, 37, 38, 39, and 47, these claims all depend from independent claims believed to be in condition for allowance. Accordingly, these claims are allowable on at least those grounds.

The Examiner has rejected Claim 8 under 35 U.S.C. 103(a) as being unpatentable over Sanchez in view of Williams. Claim 8 depends from claim 1, a claim believed to be in condition for allowance. Accordingly, claim 8 is allowable on at least those grounds.

The Examiner has rejected Claims 9, 10, 20, 21, 32, 33, 42, 43 and 53 under 35 U.S.C. 103(a) as being unpatentable over Sanchez in view of Bouyoucos. Claims 9, 10, 20, 21, 32, 33, 42, 43 and 53 all depend from independent claims believed to be in condition for allowance. Accordingly, these claims are allowable on at least those grounds.



The Examiner has rejected Claims 11, 12, 22, 23, 30, 31, 40, 41, 48, 49, 51, and 52 U.S.C. 103(a) as being unpatentable over Sanchez in view of Nootboom. Claims 11, 12, 22, 23, 30, 31, 40, 41, 48, 49, 51, and 52 all depend from independent claims believed to be in condition for allowance. Accordingly, these claims are allowable on at least those grounds.

### CONCLUSION

For all the foregoing reasons, Applicant submits that the application is in a condition for allowance. The Commissioner is hereby authorized to charge any additional fees or credit any overpayment to Deposit Account No. **13-0010 (IO-1065)**.

Respectfully submitted,

Dated: November 16, 2004



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### CERTIFICATE OF FACSIMILE

I hereby certify that this paper, along with any referred to as being attached or enclosed, is being mailed to the Attention: MS: Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, via the United States Postal Service, First Class Mail, postage prepaid on this 16th day of November, 2004.

  
Chandran D. Kumar